REMARKS

Reconsideration and allowance of the above-references application are respectfully requested.

Drawings

Attached herewith are formal versions of the originally submitted drawings complying with USPTO drafting requirements.

35 USC § 112

Claims 1-20 have been rejected under 35 USC § 112, first paragraph as failing to comply with the enablement requirement. It is respectfully submitted that no further amendments to the specification or claims are required as the cited passages relate to general comments that provide background for a skilled artisan to understand and implement the claims.

In particular, in the equation on page 6, line 11 all of the factors are in dB values. This is supported by page 5, line 12 which describes the range value and Max DRC gain as having values around 20dB and on page 5, line 16 which describes the instantaneous peak amplitude as being also in dB. Furthermore, the skilled artisan will recognize, that in some variations, the range value may refer to a difference in the highest signal peak and the amplitude of a noise floor or other ranges pertinent to dynamic range compression calculations.

Claims 7 and 17 have been rejected under 35 USC § 112, second paragraph as failing to particularly point and distinctly claim the subject matter which application regards as the invention. As a result, claims 7 and 17 have been amended to

substitute the term delta L with a range value (see, inter alia, page 4, line 23, page 6, line 12).

Form of Method Claims

Claims 1 and 11 have been amended to obviate the rejection.

35 USC § 102

Claims 1-3 and 11-13 stand rejected as being anticipated by EPO00500164 to Heitkamper. It is respectfully noted that any English translation utilized by the original Examiner was not provided to Applicant. As a result, the undersigned obtained a translation of the reference, a copy of which is enclosed herewith (and references to Heitkamper are based on this version). However, this translation is quite different than the the version cited in the office action. It is therefore respectfully noted that the cited passages of Heitkamper that form the basis of the original objections cannot be exactly identified.

Claims 1 and 11 have been amended to include limitations similar to those of claim 5. The rejection states that Heitkamper describes the adjustment of a received signal by adaptive feedback. While Heitkamper may disclose adjustment of a received signal as a function of ambient noise level, it does not apply automatic gain control (AGC) to the received signal (rather it applies it solely to the transmitted signal) (see, inter alia, Heitkamper Fig. 1).

Accordingly, claims 1 and 11, as amended, and those dependent thereon are novel in light of Heitkamper.

35 USC § 103

Claims 4-5, 8-10, 14-16, and 18-20 stand rejected as being obvious over Heitkamper in combination with U.S. Pat. No. 6,535,846 to Shashoua.

Heitkamper suggests a method of compressing the dynamic range of a transmitted signal. Dynamic-range compression amplifies weak signals more than strong signals, and is in general, useful for improving the intelligibility of speech. Heitkamper compresses the signal on two different time scales: long - AGC, and instantaneous - compander. The purpose of the AGC is to equalize the long-term average speech level so that it will have the same average level irrespective of, for example, the distance between mouth to microphone. The compander amplifies low voltage more than it amplifies high voltage, resulting in instantaneous dynamic range compression. The dynamic range compression amplifies low-level sounds like unvoiced consonants compared to high energy voice vowels.

When the transmitted signal processed by Heitkamper is composed of noise only, this noise (which is typically at the same level as low level speech segments) is not emphasized. Thus, Heitkamper's dynamic-range compressor of the transmitted signal depends on the near-end ambient noise level.

In Heitkamper, both the AGC and the companding function refer to the transmitted signal. Heitkamper also mentions that the volume of the received signal (which is not an AGC or dynamic range compressor, but a simple amplifier) is increased when the ambient noise increases.

Shashoua describes a technique that shapes the received signal (as compared to the transmitted signal used by Heitkamper) by dynamic range compression of multiple time scales. It differs from Heitkamper by using dynamic range compression of multiple time scales rather than Heitkamper's two scales: long and instantaneous. Similar to Heitkamper, Shashoua describes that when the received signal is made of noise only, the far-end noise is not amplified. Shashoua does not refer to or suggest any effect of the near-end ambient noise on the dynamic range compression of the received signal.

Heitkamper and Shashoua, whether considered singly or in combination, do not disclose or suggest adjusting the amplitude of the samples within a frame of the signal by a dynamic range compressor (DRC) that is correlated to a noise factor. The short term compression provided by this compressor is a selective amplification of low-energy speech segments. This distorts the speech signal. This distortion must be balanced by the discomfort caused to the listener and the gain in intelligibility due to the compression. A higher ambient noise level also increases compression and distortion. This is not appreciated or otherwise recognized by the cited references.

Adjusting the amplitude of the samples within a frame of the signal by a dynamic range compression gain factor correlated to a noise factor allows an improved DRC at high ambient noise compared with the noise-independent arrangement employed by Shashoua. This leads to a significant improvement in the intelligibility of the received speech in the condition of high ambient noise. It also provides enhanced intelligibility gain as compared to Heitkamper's noise-dependent volume.

With regard to original claim 5, Heitkamper is cited as disclosing that a dynamic range compression gain factor is correlated to a noise factor. The cited passage appears to refer to the dependence of the compression of a transmitted signal on ambient noise. This relation is aimed at avoiding the amplification of the noise in the transmitted signal. Such a correlation is significantly different from controlling the dynamic range of the received signal by this same ambient noise level. If the ambient noise goes up, then Heitkamper's amplification of the low-level transmitted signal is reduced, whereas, with the claimed arrangement, the amplification of the low-level received signal will increase.

Therefore, claims 1 and 11, as amended, should be allowable along with the claims dependent thereon. Each of the claims should be allowable on its own merits.

It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Applicant asks that all claims be allowed. Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 12/2/04

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Amendments to the Drawings:

The attached replacement sheets of drawings include corrected (formal) drawings of Figs. 1 to 4 and replace all of the originally submitted sheets.

Attachments following last page of this Amendment:

Replacement Sheets (4 pages)